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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/582,329	06/09/2006	Tadashi Yano	074782-0020	4935

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EXAMINER	
SANTIAGO, MARICELI	
ART UNIT	PAPER NUMBER
2879	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/582,329	YANO ET AL.	
	Examiner	Art Unit	
	Mariceli Santiago	2879	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 June 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5 and 7-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,5,7,8,10-12 and 14-16* is/are rejected.

7)☒ Claim(s) *3,4,9 and 13* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *09 June 2006* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *6/06,9/07,11/07*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

Receipt of the Amendment, filed on June 9, 2006, is acknowledged.

Cancellation of claim 6 has been entered.

Claims 1-5 and 7-16 are pending in the instant application.

Drawings

Figures 1-6 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 14-16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 14 recites " the optical diffusion layer covers a surface of the phosphor resin portion and **has a substantially uniform thickness**", the recitation is indefinite since it directly contradicts the limitation of base claim 10 of "the thickness of the optical diffusion layer on the

upper surface of the phosphor resin portion **is greater around the periphery of the upper surface than around the center of the upper surface**". The thickness of the optical diffusion layer is greater at peripheries of the phosphor resin, so it is unclear as to how it can also have uniform thickness.

Claims 15-16 recite the limitation "the light-transmissive resin portion". There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 2, 5, 7, 8, 10-12 and 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tarsa et al. (US 7,005,679) in view of Reeh et al. (US 6,576,930).

Regarding claim 1, Tarsa discloses a method for fabricating an LED lamp (Fig. 14), the method comprising the steps of:

(a) preparing a substrate (16) with at least one LED chip (172) mounted thereon;

(b) forming a phosphor conversion portion (178) on the substrate such that at least the upper surface of the LED chip (172) is covered with the phosphor conversion portion (178); and

(c) arranging a lens that acts on the outgoing light of the phosphor conversion portion (Column 12, lines 38-43), wherein the method further comprises the steps of:

(d) forming an optical diffusion layer (182), in which particles (192) to scatter the outgoing light of the phosphor conversion portion are dispersed, between the phosphor conversion portion and the lens, and

(e) increasing the thickness of the optical diffusion layer on the upper surface of the phosphor conversion portion from around the center of the upper surface toward the periphery of the upper surface (Fig. 14).

Tarsa fails to exemplify the limitation of the phosphor conversion layer being made of a resin layer mixed with phosphor material. However, in the same field of endeavor, Reeh discloses a method for fabricating an LED lamp provided with a phosphor conversion layer made of a resin matrix mixed with phosphor material (Column 5, lines 63-67). It is considered within the capabilities of one skilled in the art the selection of a material based on its known suitability for an intended application as an obvious matter of design engineering. Thus, it would have been obvious to one having ordinary skills in the art at the time the invention was made to have the phosphor resin composition as disclosed by Reeh in the method of Tarsa, since the selection of known materials for a known purpose is within the skill of the art.

Regarding claim 2, Tarsa discloses a method wherein the optical diffusion layer is made of a light-transmissive resin in which the particles are dispersed (Column 11, lines 48-50).

Regarding claim 5, Tarsa fails to exemplify the limitation wherein the optical diffusion layer has a thickness of 10 μm to 1 mm. It has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the optical diffusion layer having a thickness of 10 μm to 1 mm, since optimization of workable ranges is considered within the skill of the art.

Regarding claim 7, Tarsa discloses the scattering particles being made of TiO_2, however, fails to exemplify the limitation of the particles being made of at least one material selected from the group consisting of SiO_2, MgO, $BaSO_4$ and Al_2O_3. In the same field of endeavor, Reek discloses a method for fabricating an LED lamp provided with optical diffusion element having scattering particles made of at least one material selected from the group

consisting of SiO_2, $BaSO_4$ and TiO_2 (Column 14, lines 39-50). It is considered within the capabilities of one skilled in the art the selection of a material based on its known suitability for an intended application as an obvious matter of design engineering. Thus, it would have been obvious to one having ordinary skills in the art at the time the invention was made to have the scattering particles made of at least one material selected from the group consisting of SiO_2 and $BaSO_4$, since the selection of known materials for a known purpose is within the skill of the art.

Regarding claim 8, Tarsa discloses a method wherein the LED chip is a bare chip LED, which has been flip-chip bonded onto the substrate.

Regarding claim 10, Tarsa discloses an LED lamp (Fig. 14) comprising: at least one LED (172) chip that is mounted on a substrate (176); a phosphor conversion (178) portion that covers at least the upper surface of the LED chip (172); a lens to act on the outgoing light of the phosphor conversion portion (Column 12, lines 38-43); and an optical diffusion layer (184), which is arranged between the phosphor conversion portion and the lens and in which particles (192) to scatter the light are dispersed, wherein the thickness of the optical diffusion laver on the upper surface of the phosphor conversion portion is greater around the periphery of the upper surface than around the center of the upper surface (Fig. 14).

Tarsa fails to exemplify the limitation of the phosphor conversion layer being made of a resin layer mixed with phosphor material. However, in the same field of endeavor, Reeh discloses a method for fabricating an LED lamp provided with a phosphor conversion layer made of a resin matrix mixed with phosphor material (Column 5, lines 63-67). It is considered within the capabilities of one skilled in the art the selection of a material based on its known suitability for an intended application as an obvious matter of design engineering. Thus, it would have been obvious to one having ordinary skills in the art at the time the invention was made to have the phosphor resin composition as disclosed by Reeh in the LED of Tarsa, since the selection of known materials for a known purpose is within the skill of the art.

Regarding claim 11, Tarsa discloses an LED lamp wherein the phosphor resin portion includes a phosphor (178) for converting the emission of the LED chip into light that has a longer wavelength than the emission, and wherein the optical diffusion layer is made of a light-transmissive resin in which the particles (192) are dispersed.

Regarding claim 12, Tarsa discloses an LED lamp wherein the optical diffusion layer (184) covers at least the periphery of the upper surface of the phosphor resin portion (Fig. 14).

Regarding claim 14, Tarsa discloses an LED lamp (Fig. 15) comprising: at least one LED (172) chip that is mounted on a substrate (176); a phosphor resin (178) portion that covers at least the upper surface of the LED chip (172); a lens to act on the outgoing light of the phosphor resin portion (Column 12, lines 38-43); and an optical diffusion layer, which is arranged between the phosphor resin portion and the lens and in which particles (194) to scatter the light are dispersed, wherein the optical diffusion layer covers a surface of the phosphor resin portion and has a substantially uniform thickness (Fig. 15).

Regarding claim 15, Tarsa discloses an LED lamp further comprising a reflector (182), which has an opening to store the light-transmissive resin portion (i.e., resin matrix of Reeh) therein, on the substrate (base of metal cup 182), wherein a side surface defining the opening functions as a reflective surface for reflecting the emission of the LED chip (Fig. 14).

Regarding claim 16, Tarsa discloses an LED lamp wherein the reflective surface is spaced apart from a side surface of the light-transmissive resin portion (Fig. 14).

Allowable Subject Matter

Claims 3, 4, 9 and 13 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mariceli Santiago whose telephone number is (571) 272-2464. The examiner can normally be reached on Monday-Friday from 9:30 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel, can be reached on (571) 272-2457. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Mariceli Santiago/
Primary Examiner, Art Unit 2879